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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,286	02/16/2006	Takashi Fukuda	040302-0547	3477

22428 7590 01/17/2007
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
WILLIAMS, SHERMANDA L	
ART UNIT	PAPER NUMBER
1745	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/568,286	FUKUDA, TAKASHI	
	Examiner	Art Unit	
	Shermanda L. Williams	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *2/16/2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/16/06, 5/15/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statements (IDS) submitted on 2/16/06 and 5/15/06 were considered by the examiner.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "substantial voltage" in claim 2 is a relative term which renders the claim indefinite. The phrase "substantial voltage" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claims 4-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what the applicant means by a clogging detector. What parameters are being monitored to determine if a clog does exist? How is it determined that a "possibility" of clogging existing? What parameter is

being monitored to determine that a "possibility" of clogging existing? Claims depending on claims rejected under 35 U.S.C. 112, second paragraph are also rejected for the same reason.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "low" in claim 7 is a relative term which renders the claim indefinite. The term "low" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what the applicant means by the phrases "predetermined value" and "predetermined range". Neither the claim nor the specification contains a standard for determining the "predetermined value" and "predetermined range". The phrases are not defined in the claim or specification in such a manner that one of ordinary skill in the art would be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Akahori (JP 2003-115314).

Akahori discloses a control device for a hydrogen-fueled fuel cell system. The fuel cell system is comprised of a circulation path, circulation pump or ejector **208**, a discharge valve **206**, a voltage sensor 215, and a controller **214** (Paragraph 28, See Drawing 1). The controller actuates the purge or discharge valve corresponding to the cell voltage status detected by the voltage detector (See Abstract).

The opening or closing of the purge valve by the controller also controls the amount of fuel available for recirculation to the inlet of the fuel cell system. Therefore, the amount of fluid flow through the ejector is varied depending on the opening and closing of the purge valve and the flow rate through the ejector would be indirectly controlled by the measured voltage.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akahori (JP 2003-115314).

The disclosure of Akahori as discussed above are incorporated herein.

Akahori does not explicitly state that the fuel cell system is comprised of multiple fuel cells positioned on one another. It is known in the art that the assembly of multiple fuel cells in a fuel system increases the overall voltage output of the system. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify to the fuel cell system of Akahori to include multiple cells in order to increase the voltage output of the fuel cell system for a given load demand.

With regards to claim 3, as the variation in the measured voltages between the cells becomes smaller (V1<V2, the indication of short circuit), the purge valve is opened increasing the cell discharge rate (Paragraph 31-34).

7. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akahori (JP 2003-115314) as applied to claim 1 above and incorporated herein, and in view of Barton et al. (US 6,960,401 B2).

Akahori does not disclose that the discharge valve is controlled to increase the discharge flow as the rate of increase in the measured voltage is low or that the circulation pump is controlled to increase the flow rate of the circulation gas more than in a normal operation.

With respect to claim 8, Akahori does not explicitly state that the fuel cell system is comprised of multiple fuel cells positioned on one another. It is known in the art that the assembly of multiple fuel cells in a fuel system increases the overall voltage output of the system. It would have been obvious to one having ordinary skill in the art at the

time the invention was made to modify to the fuel cell system of Akahori to include multiple cells in order to increase the voltage output of the fuel cell system for a given load demand.

Barton teaches a fuel cell purging method and apparatus. A significant drop in the voltage across one or more of the fuel cells requires a purge valve to open (col. 12 lines 1-10). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Akahori to include a purge activation if the rate of increase in the measured voltage is low such as taught by Barton et al. in order to discharge fuel from the fuel cell as result of abnormal operation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to increase the circulated flow gas to a value above normal operation to force the fuel inside the fuel cell to flow to out the discharge valve as a result of the pressure increase in the circulation line.

8. With regards to claim 8, Barton et al. teaches that the monitoring of the fuel cell system voltage and opening the purge valve if the measured voltage is output is below a predetermined value (col. 7 lines 16-27). Barton et al. also teaches the monitoring of the output voltage to determine if it is within an acceptable limit or predetermined range (col. 7 lines 16-24), the resulting determination is input to the controller.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to purge the fuel from the fuel cell if the measured voltage output is below a predetermined value in order to remove impurities from the fuel cell and prevent failure of the fuel cell system.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shermanda L. Williams whose telephone number is (571) 272-8915. The examiner can normally be reached on Mon.-Thurs. 7 AM - 4:30 PM and alternating Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SUSY TSANG-FOSTER
PRIMARY EXAMINER